

PREVIOUS EDITIONS OF THIS FORM ARE OBSOLETE

USER SYMBOLS  
NAVY - MC  
ARMY - AT, MU, ME

REVIEWER SYMBOLS:  
NAVY - OS  
ARMY - WC, MI, AV  
AIR FORCE - 82, 85

"Review user information is current as of the date of this document. For future coordination of changes to this document, such coordination should be based on the information in the current DODSIS."

This military standard is approved by the Department of Defense and is mandatory for use by all Departments and Agencies of the Department of Defense. Selection for all new engineering and design applications and for replacement use shall be made from this document.

FED. SUP. CLASS 5340																													
H		D		B		E		J		T		G		W		K		°C		°R OF RETAINED PART									
HOUSING DIAMETER		FREE DIAMETER										RECOMMENDED GROOVE		WIDTH		GAP		MAX.		MAX.									
INCH	MM	BASIC	TOL.	BASIC	TOL.	BASIC	TOL.	BASIC	TOL.	BASIC	TOL.	BASIC	TOL.	BASIC	TOL.	MIN.	MAX.	MIN.	MAX.	MIN.	MAX.								
1.562	39.7	1.734		.202		.157		.078		.062		1.656		.068		.338	1.14	.064	.050										
1.575	40.0	1.734		.202		.157		.078		.062		1.671		.068		.374	1.15	.064	.050										
1.625	41.3	1.804		.227		.164		.082		.062		1.725		.068		.339	1.15	.064	.050										
1.653	42.0	1.835		.227		.167		.083		.062		1.755		.068		.348	1.17	.064	.050										
1.688	42.9	1.874	.035	.227		.170		.085		.062		1.792		.068	.004	.357	1.21	.064	.050										
1.750	44.4	1.942	.025	.234		.171		.083		.062		1.858		.068	.000	.372	1.26	.064	.050										
1.812	46.0	2.012		.234		.170		.084		.062		1.922		.068		.382	1.32	.064	.050										
1.850	47.0	2.054		.234		.170		.085		.062		1.962		.068		.392	1.36	.064	.050										
1.875	47.6	2.072		.234		.170		.085		.062		1.989		.068		.420	1.39	.064	.050										
1.938	49.2	2.141		.234		.170		.085		.062		2.056		.068		.438	1.45	.064	.050										
2.000	50.8	2.210		.240		.170		.085		.062		2.122		.068		.453	1.50	.064	.050										
2.047	52.0	2.280		.250		.186		.091		.078		2.171		.068		.428	1.52	.076	.061										
2.062	52.4	2.280		.250		.186		.091		.078		2.186		.068		.468	1.54	.078	.062										
2.125	54.0	2.350		.260		.195		.096		.078		2.251		.068		.460	1.58	.078	.062										
2.165	55.0	2.415		.264		.199		.098		.078		2.295		.068		.459	1.61	.078	.062										
2.188	55.6	2.415		.264		.199		.098		.078		2.318		.068		.489	1.64	.078	.062										
2.250	57.1	2.490		.270		.203		.100		.078		2.382		.068		.478	1.69	.078	.062										
2.312	58.7	2.560		.270		.206		.100		.078		2.450		.068		.486	1.75	.078	.062										
2.375	60.3	2.630		.270		.207		.102		.078		2.517		.068		.504	1.81	.078	.062										
2.440	62.0	2.702		.280		.209		.103		.078		2.584		.068		.518	1.86	.078	.062										
2.500	63.5	2.775		.280		.210		.103		.078		2.648		.068		.532	1.91	.078	.062										
2.531	64.3	2.775	.040	.280		.210		.103		.078		2.681		.068	.005	.597	1.94	.078	.062										
2.562	65.1	2.844	.030	.290		.222		.109		.083		2.714		.103	.000	.540	1.95	.088	.070										
2.625	66.7	2.910		.290		.226		.111		.083		2.781		.103		.558	2.02	.088	.070										
2.677	68.0	2.980		.300		.230		.113		.083		2.837		.103		.539	2.05	.090	.072										
2.688	68.3	2.980		.300		.230		.113		.083		2.848		.103		.568	2.06	.090	.072										
2.750	69.8	3.050		.300		.234		.115		.083		2.914		.103		.590	2.12	.092	.074										
2.812	71.4	3.121		.300		.230		.115		.083		2.980		.103		.615	2.18	.088	.070										
2.835	72.0	3.121		.300		.230		.115		.083		3.006		.103		.676	2.21	.088	.070										
2.875	73.0	3.191		.310		.240		.120		.083		3.051		.103		.628	2.22	.092	.074										
2.953	75.0	3.325		.310		.250		.122		.083		3.135		.103		.619	2.30	.092	.074										
3.000	76.2	3.325		.310		.250		.122		.083		3.182		.103		.738	2.35	.092	.074										
3.062	77.8	3.418		.310		.254		.126		.109		3.248		.120		.651	2.41	.097	.078										
3.125	79.4	3.488		.310		.259		.129		.109		3.315		.120		.655	2.47	.099	.079										
3.149	80.0	3.523		.310		.262		.129		.109		3.341		.120		.650	2.49	.100	.080										
3.156	80.2	3.523		.310		.262		.129		.109		3.348		.120		.689	2.50	.100	.080										
3.250	82.5	3.623		.342		.269		.135		.109		3.416		.120		.698	2.54	.104	.083										
3.346	85.0	3.734	.055	.342		.276		.140		.109		3.546		.120		.705	2.63	.108	.086										
3.469	88.1	3.857		.342		.286		.144		.109		3.675		.120		.763	2.76	.108	.086										
3.500	88.9	3.890		.342		.289		.142		.108		3.710		.120		.774	2.79	.110	.088										
3.543	90.0	3.936		.342		.292		.142		.109		3.755		.120		.788	2.83	.110	.088										
3.582	90.5	3.936		.342		.292		.142		.109		3.776		.120		.842	2.85	.110	.088										
3.625	92.1	4.024		.342		.299		.150		.109		3.841		.120		.853	2.91	.116	.093										
P. A. NAVY - OS Other Case												TITLE RING, RETAINING, INTERNAL, BASIC (TAPERED SECTION TYPE)										MILITARY STANDARD MS16625							
PRECEDENT SPECIFICATION MIL-R-21248 TY. I CL. I												SUPERSEDES										SHEET 2							

FED. SUP CLASS  
5340

APPROVED 11 DEC 1958 REVISED (C) FOR CHANGES SEE SHEETS 1 THROUGH 10

REVIEW SYMBOLS:  
NAVY - OS  
ARMY - WC, MI, AV  
AIR FORCE - 02, 05

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NAVY - OS  
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P.A. NAVY - OS		TITLE		MILITARY STANDARD								
Other Case:		RING, RETAINING, INTERNAL, BASIC (TAPERED SECTION TYPE)		MS16625								
PROCUREMENT SPECIFICATION MIL-R-21248 TY. ICL 1		SUPERSEDES		SHEET 3								
H HOUSING DIAMETER INCH	N FREE DIAMETER MM	D BASIC TOL.	B TOL.	E BASIC TOL.	J BASIC TOL.	T BASIC TOL.	G RECOMMENDED GROOVE DIAMETER BASIC TOL.	W WIDTH BASIC TOL.	K GAP WIDTH MIN.	°C	°R OF RETAINED PART	CH MAX.
3.740	95.0	4.157	.342	.309	.155	.109	3.944	.120	.844	3.02	120	.006
3.750	95.2	4.157	.342	.309	.155	.109	3.974	.120	.871	3.03	120	.006
3.755	95.4	4.157	.342	.309	.155	.109	3.974	.120	.871	3.03	120	.006
3.765	95.6	4.157	.342	.309	.155	.109	3.974	.120	.871	3.03	120	.006
3.775	95.8	4.157	.342	.309	.155	.109	3.974	.120	.871	3.03	120	.006
3.785	96.0	4.157	.342	.309	.155	.109	3.974	.120	.871	3.03	120	.006
3.795	96.2	4.157	.342	.309	.155	.109	3.974	.120	.871	3.03	120	.006
3.805	96.4	4.157	.342	.309	.155	.109	3.974	.120	.871	3.03	120	.006
3.815	96.6	4.157	.342	.309	.155	.109	3.974	.120	.871	3.03	120	.006
3.825	96.8	4.157	.342	.309	.155	.109	3.974	.120	.871	3.03	120	.006
3.835	97.0	4.157	.342	.309	.155	.109	3.974	.120	.871	3.03	120	.006
3.845	97.2	4.157	.342	.309	.155	.109	3.974	.120	.871	3.03	120	.006
3.855	97.4	4.157	.342	.309	.155	.109	3.974	.120	.871	3.03	120	.006
3.865	97.6	4.157	.342	.309	.155	.109	3.974	.120	.871	3.03	120	.006
3.875	97.8	4.157	.342	.309	.155	.109	3.974	.120	.871	3.03	120	.006
3.885	98.0	4.157	.342	.309	.155	.109	3.974	.120	.871	3.03	120	.006
3.895	98.2	4.157	.342	.309	.155	.109	3.974	.120	.871	3.03	120	.006
3.905	98.4	4.157	.342	.309	.155	.109	3.974	.120	.871	3.03	120	.006
3.915	98.6	4.157	.342	.309	.155	.109	3.974	.120	.871	3.03	120	.006
3.925	98.8	4.157	.342	.309	.155	.109	3.974	.120	.871	3.03	120	.006
3.935	99.0	4.157	.342	.309	.155	.109	3.974	.120	.871	3.03	120	.006
3.945	99.2	4.157	.342	.309	.155	.109	3.974	.120	.871	3.03	120	.006
3.955	99.4	4.157	.342	.309	.155	.109	3.974	.120	.871	3.03	120	.006
3.965	99.6	4.157	.342	.309	.155	.109	3.974	.120	.871	3.03	120	.006
3.975	99.8	4.157	.342	.309	.155	.109	3.974	.120	.871	3.03	120	.006
3.985	100.0	4.157	.342	.309	.155	.109	3.974	.120	.871	3.03	120	.006
3.995	100.2	4.157	.342	.309	.155	.109	3.974	.120	.871	3.03	120	.006
4.005	100.4	4.157	.342	.309	.155	.109	3.974	.120	.871	3.03	120	.006
4.015	100.6	4.157	.342	.309	.155	.109	3.974	.120	.871	3.03	120	.006
4.025	100.8	4.157	.342	.309	.155	.109	3.974	.120	.871	3.03	120	.006
4.035	101.0	4.157	.342	.309	.155	.109	3.974	.120	.871	3.03	120	.006
4.045	101.2	4.157	.342	.309	.155	.109	3.974	.120	.871	3.03	120	.006
4.055	101.4	4.157	.342	.309	.155	.109	3.974	.120	.871	3.03	120	.006
4.065	101.6	4.157	.342	.309	.155	.109	3.974	.120	.871	3.03	120	.006
4.075	101.8	4.157	.342	.309	.155	.109	3.974	.120	.871	3.03	120	.006
4.085	102.0	4.157	.342	.309	.155	.109	3.974	.120	.871	3.03	120	.006
4.095	102.2	4.157	.342	.309	.155	.109	3.974	.120	.871	3.03	120	.006
4.105	102.4	4.157	.342	.309	.155	.109	3.974	.120	.871	3.03	120	.006
4.115	102.6	4.157	.342	.309	.155	.109	3.974	.120	.871	3.03	120	.006
4.125	102.8	4.157	.342	.309	.155	.109	3.974	.120	.871	3.03	120	.006
4.135	103.0	4.157	.342	.309	.155	.109	3.974	.120	.871	3.03	120	.006
4.145	103.2	4.157	.342	.309	.155	.109	3.974	.120	.871	3.03	120	.006
4.155	103.4	4.157	.342	.309	.155	.109	3.974	.120	.871	3.03	120	.006
4.165	103.6	4.157	.342	.309	.155	.109	3.974	.120	.871	3.03	120	.006
4.175	103.8	4.157	.342	.309	.155	.109	3.974	.120	.871	3.03	120	.006
4.185	104.0	4.157	.342	.309	.155	.109	3.974	.120	.871	3.03	120	.006
4.195	104.2	4.157	.342	.309	.155	.109	3.974	.120	.871	3.03	120	.006
4.205	104.4	4.157	.342	.309	.155	.109	3.974	.120	.871	3.03	120	.006
4.215	104.6	4.157	.342	.309	.155	.109	3.974	.120	.871	3.03	120	.006
4.225	104.8	4.157	.342	.309	.155	.109	3.974	.120	.871	3.03	120	.006
4.235	105.0	4.157	.342	.309	.155	.109	3.974	.120	.871	3.03	120	.006
4.245	105.2	4.157	.342	.309	.155	.109	3.974	.120	.871	3.03	120	.006
4.255	105.4	4.157	.342	.309	.155	.109	3.974	.120	.871	3.03	120	.006
4.265	105.6	4.157	.342	.309	.155	.109	3.974	.120	.871	3.03	120	.006
4.275	105.8	4.157	.342	.309	.155	.109	3.974	.120	.871	3.03	120	.006
4.285	106.0	4.157	.342	.309	.155	.109	3.974	.120	.871	3.03	120	.006
4.295	106.2	4.157	.342	.309	.155	.109	3.974	.120	.871	3.03	120	.006
4.305	106.4	4.157	.342	.309	.155	.109	3.974	.120	.871	3.03	120	.006
4.315	106.6	4.157	.342	.309	.155	.109	3.974	.120	.871	3.03	120	.006
4.325	106.8	4.157	.342	.309	.155	.109	3.974	.120	.871	3.03	120	.006
4.335	107.0	4.157	.342	.309	.155	.109	3.974	.120	.871	3.03	120	.006
4.345	107.2	4.157	.342	.309	.155	.109	3.974	.120	.871	3.03	120	.006
4.355	107.4	4.157	.342	.309	.155	.109	3.974	.120	.871	3.03	120	.006
4.365	107.6	4.157	.342	.309	.155	.109	3.974	.120	.871	3.03	120	.006
4.375	107.8	4.157	.342	.309	.155	.109	3.974	.120	.871	3.03	120	.006
4.385	108.0	4.157	.342	.309	.155	.109	3.974	.120	.871	3.03	120	.006
4.395	108.2	4.157	.342	.309	.155	.109	3.974	.120	.871	3.03	120	.006
4.405	108.4	4.157	.342	.309	.155	.109	3.974	.120	.871	3.03	120	.006
4.415	108.6	4.157	.342	.309	.155	.109	3.974	.120	.871	3.03	120	.006
4.425	108.8	4.157	.342	.309	.155	.109	3.974	.120	.871	3.03	120	.006
4.435	109.0	4.157	.342	.309	.155	.109	3.974	.120	.871	3.03	120	.006
4.445	109.2	4.157	.342	.309	.155	.109	3.974	.120	.871	3.03	120	.006
4.455	109.4	4.157	.342	.309	.155	.109	3.974	.120	.871	3.03	120	.006
4.465	109.6	4.157	.342	.309	.155	.109	3.974	.120	.871	3.03	120	.006
4.475	109.8	4.157	.342	.309	.155	.109	3.974	.120	.871	3.03	120	.006
4.485	110.0	4.157	.342	.309	.155	.109	3.974	.120	.871	3.03	120	.006
4.495	110.2	4.157	.342	.309	.155	.109	3.974	.120	.871	3.03	120	.006
4.505	110.4	4.157	.342	.309	.155	.109	3.974	.120	.871	3.03	120	.006
4.515	110.6	4.157	.342	.309	.155	.109	3.974	.120	.871	3.03	120	.006
4.525	110.8	4.157	.342	.309	.155	.109	3.974	.120	.871	3.03	120	.006
4.535	111.0	4.157	.342	.309	.155	.109	3.974	.120	.871	3.03	120	.006
4.545	111.2	4.157	.342	.309	.155	.109	3.974	.120	.871	3.03	120	.006
4.555	111.4	4.157	.342	.309	.155	.109	3.974	.120	.871	3.03	120	.006
4.565	111.6	4.157	.342	.309	.155	.109	3.974	.120	.871	3.03	120	.006
4.575	111.8	4.157	.342	.309	.155	.109	3.974	.120	.871	3.03	120	.006
4.585	112.0	4.157	.342	.309	.155	.109	3.974	.120	.871	3.03	120	.006
4.595	112.2	4.157	.342	.309	.155	.109	3.974	.120	.871	3.03	120	.006

USER SYMBOLS:  
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ARMY - AT, MU, MS

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NAVY - OS  
ARMY - WC, MI, AV  
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H HOUSING DIAMETER	STEEL CADMIUM PLATED	STEEL PHOSPHATE COATED	STEEL CORROSION RESISTING	BERYLLIUM COPPER	FED. SUP CLASS 5340
	DASH NO.	DASH NO.	DASH NO.	DASH NO.	
.250	MS16625-1025	MS16625-3025	MS16625-4025	MS16625-5025	
.312	-1031	-3031	-4031	-5031	
.375	-1037	-3037	-4037	-5037	
.438	-1043	-3043	-4043	-5043	
.453	-1045	-3045	-4045	-5045	
.500	-1050	-3050	-4050	-5050	
.512	-1051	-3051	-4051	-5051	
.562	-1056	-3056	-4056	-5056	
.625	-1062	-3062	-4062	-5062	
.688	-1068	-3068	-4068	-5068	
.750	-1075	-3075	-4075	-5075	
.777	-1077	-3077	-4077	-5077	
.812	-1081	-3081	-4081	-5081	
.866	-1086	-3086	-4086	-5086	
.875	-1087	-3087	-4087	-5087	
.901	-1090	-3090	-4090	-5090	
.938	-1093	-3093	-4093	-5093	
1.000	-1100	-3100	-4100	-5100	
1.025	-1102	-3102	-4102	-5102	
1.062	-1106	-3106	-4106	-5106	
1.125	-1112	-3112	-4112	-5112	
1.181	-1118*	-3118*	-4118*	-5118*	
1.188	-1118*	-3118*	-4118*	-5118*	
1.250	-1125*	-3125*	-4125*	-5125*	
1.259	-1125*	-3125*	-4125*	-5125*	
1.312	-1131	-3131	-4131	-5131	
1.375	-1137*	-3137*	-4137*	-5137*	
1.378	-1137*	-3137*	-4137*	-5137*	
1.438	-1143	-3143	-4143	-5143	
1.456	-1145	-3145	-4145	-5145	
1.500	-1150	-3150	-4150	-5150	
1.562	-1156*	-3156*	-4156*	-5156*	
1.575	-1156*	-3156*	-4156*	-5156*	
1.625	-1162	-3162	-4162	-5162	
1.653	-1165	-3165	-4165	-5165	
1.688	-1168	-3168	-4168	-5168	
1.750	-1175	-3175	-4175	-5175	
1.812	-1181	-3181	-4181	-5181	
1.850	-1185	-3185	-4185	-5185	
1.875	-1187	-3187	-4187	-5187	
1.938	-1193	-3193	-4193	-5193	
2.000	-1200	-3200	-4200	MS16625-5200	
2.047	-1206*	-3206*	-4206*	-5206*	
2.062	-1206*	-3206*	-4206*	-5206*	
2.125	-1212	-3212	-4212	-5212	
2.165	-1216*	-3216*	-4216*	-5216*	
2.188	-1218*	-3218*	-4218*	-5218*	
2.250	-1225	-3225	-4225	-5225	
2.312	-1231	-3231	-4231	-5231	
2.375	-1237	-3237	-4237	-5237	
2.440	-1244	-3244	-4244	-5244	
2.500	-1250*	-3250*	-4250*	-5250*	
2.531	-1250*	-3250*	-4250*	-5250*	
2.562	-1256	-3256	-4256	-5256	
2.625	-1262	-3262	-4262	-5262	
2.677	-1268*	-3268*	-4268*	-5268*	
2.688	MS16625-1268*	MS16625-3268*	MS16625-4268*	-5268*	

APPROVED 11 DEC 1968 REVISED C FOR CHANGES SEE SHEETS 1 THROUGH 10

P.A. NAVY-OS Other Code ARMY - WC AIR FORCE - 11	TITLE RING, RETAINING, INTERNAL, BASIC (TAPERED SECTION TYPE)	MILITARY STANDARD MS16625
PROCUREMENT SPECIFICATION MIL-R-21248 TY. I CL. 1	SUPERSEDES	SHEET 4

USER SYMBOLS:

NAVY - MC  
ARMY - AT, MU, ME

REVIEWER SYMBOLS:

NAVY - OS  
ARMY - WC, ML, AV  
AIR FORCE - 82, 86

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H HOUSING DIAMETER	STEEL CADMIUM PLATED	STEEL PHOSPHATE COATED	STEEL CORROSION RESISTING	PED. SUP CLASS 5340
	DASH NO.	DASH NO.	DASH NO.	
2.750	MS16625-1275	MS16625-3275	MS16625-4275	
2.813	-1281*	-3281*	-4281*	
2.834	-1281*	-3281*	-4281*	
2.875	-1287	-3287	-4287	
2.953	-1300*	-3300*	-4300*	
3.000	-1300*	-3300*	-4300*	
3.062	-1306	-3306	-4306	
3.125	-1312	-3312	-4312	
3.149	-1315*	-3315*	-4315*	
3.156	-1315*	-3315*	-4315*	
3.250	-1325	-3325	-4325	
3.348	-1334	-3334	-4334	
3.468	-1348	-3348	-4348	
3.500	-1350	-3350	-4350	
3.648	-1354*	-3354*	-4354*	
3.662	-1354*	-3354*	-4354*	
3.625	-1362	-3362	-4362	
3.740	-1375*	-3375*	-4375*	
3.750	-1375*	-3375*	-4375*	
3.875	-1387	-3387	-4387	
3.938	-1393	-3393	-4393	
4.000	-1400	-3400	-4400	
4.125	-1412	-3412	-4412	
4.250	-1425	-3425	-4425	
4.330	-1438	-3438	-4438	
4.500	-1450	-3450	-4450	
4.625	-1462	-3462	-4462	
4.724	-1475*	-3475*	-4475*	
4.750	-1475*	-3475*	-4475*	
5.000	-1500	-3500	-4500	
5.250	-1525	-3525	-4525	
5.375	-1537	-3537	-4537	
5.500	-1550	-3550	-4550	
5.750	-1575	-3575	-4575	
6.000	-1600	-3600	-4600	
6.250	-1625	-3625	-4625	
6.500	-1650	-3650	-4650	
6.625	-1662	-3662	-4662	
6.750	-1675	-3675	-4675	
7.000	-1700	-3700	-4700	
7.250	-1725	-3725	-4725	
7.500	-1750	-3750	-4750	
8.000	-1800	-3800	-4800	
8.250	-1825	-3825	-4825	
8.500	-1850	-3850	-4850	
8.750	-1875	-3875	-4875	
9.000	-1900	-3900	-4900	
9.250	-1925	-3925	-4925	
9.500	-1950	-3950	-4950	
9.750	-1975	-3975	-4975	
10.000	MS16625-2000	MS16625-4000	MS16625-5000	

\* SAME DASH NUMBERS SUITABLE FOR EITHER HOUSING DIAMETER (INCHES OR MM.)

P.A. NAVY - OS Other Code ARMY - WC AIR FORCE - 11	TITLE RING, RETAINING, INTERNAL BASIC (TAPERED SECTION TYPE)	MILITARY STANDARD MS16625
PROCUREMENT SPECIFICATION MIL-R-21348 TY. I CL. 1	SUPERSEDES	SHEET 5

USER SYMBOLS:  
NAVY - MC  
ARMY - AT, MU, ME

REVISOR SYMBOLS:  
NAVY - OS  
ARMY - WC, MI, AV  
AIR FORCE - 82, 86

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SUBSTITUTION TABLE CROSS REFERENCE OF PART NUMBERS				FED. SUP CLASS 5340
H HOUSING DIAMETER	INACTIVE	INACTIVE	SUBSTITUTE	
	STEEL $\angle$	STEEL ZINC PLATED	STEEL CADMIUM PLATED	
	DASH NO.	DASH NO.	DASH NO.	
.250	MS16625 -25	MS16625 -2025	MS16625 -1025	
.312	-31	-2031	-1031	
.375	-37	-2037	-1037	
.438	-43	-2043	-1043	
.463	-45	-2045	-1045	
.500	-50	-2050	-1050	
.512	-51	-2051	-1051	
.562	-56	-2056	-1056	
.625	-62	-2062	-1062	
.688	-68	-2068	-1068	
.750	-75	-2075	-1075	
.777	-77	-2077	-1077	
.812	-81	-2081	-1081	
.866	-86	-2086	-1086	
.875	-87	-2087	-1087	
.901	-90	-2090	-1090	
.938	-93	-2093	-1093	
1.000	-100	-2100	-1100	
1.023	-102	-2102	-1102	
1.062	-106	-2106	-1106	
1.125	-112	-2112	-1112	
1.181	-118	-2118	-1118	
1.188	-118	-2118	-1118	
1.250	-125	-2125	-1125	
1.259	-125	-2125	-1125	
1.312	-131	-2131	-1131	
1.375	-137	-2137	-1137	
1.378	-137	-2137	-1137	
1.438	-143	-2143	-1143	
1.466	-145	-2145	-1145	
1.500	-150	-2150	-1150	
1.562	-156	-2156	-1156	
1.575	-156	-2156	-1156	
1.625	-162	-2162	-1162	
1.653	-165	-2165	-1165	
1.688	-168	-2168	-1168	
1.750	-175	-2175	-1175	
1.812	-181	-2181	-1181	
1.850	-185	-2185	-1185	
1.875	-187	-2187	-1187	
1.938	-193	-2193	-1193	
2.000	-200	-2200	-1200	
2.047	-206	-2206	-1206	
2.062	-206	-2206	-1206	
2.125	-212	-2212	-1212	
2.165	-218	-2218	-1218	
2.188	-218	-2218	-1218	
2.250	-225	-2225	-1225	
2.312	-231	-2231	-1231	
2.375	-237	-2237	-1237	
2.440	-244	-2244	-1244	
2.500	-250	-2250	-1250	
2.531	-250	-2250	-1250	
2.562	-256	-2256	-1256	
2.625	-262	-2262	-1262	
2.677	-268	-2268	-1268	
2.688	-268	-2268	-1268	
2.750	-275	-2275	-1275	
2.813	-281	-2281	-1281	
2.834	-281	-2281	-1281	
2.875	MS16625 -287	MS16625 -2287	MS16625 -1287	

P.A. NAVY - OS Other Code ARMY - WC AIR FORCE - 11	TITLE RING, RETAINING, INTERNAL, BASIC (TAPERED SECTION TYPE)	MILITARY STANDARD MS16625
PROCUREMENT SPECIFICATION MIL-R-21248 TY. 1 CL. 1	SUPERSEDES	SHEET 6

APPROVED 11 DEC 1958 REVISED (C) FOR CHANGES SEE SHEETS 1 THROUGH 10



USER SYMBOLS:  
NAVY - MC  
ARMY - AT, MU, ME

REVIEWER SYMBOLS:  
NAVY - OS  
ARMY - WC, MI, AV  
AIR FORCE - 82, 85

"Review" user information is current as of the date of this document. For future confirmation of changes to this document, such circulation should be based on the information in the current DODDS."

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SUBSTITUTION TABLE				FED. SUP CLASS 5340
CROSS REFERENCE OF PART NUMBERS				
B HOUSING DIAMETER	INACTIVE STEEL /1	INACTIVE STEEL ZINC PLATED	SUBSTITUTE STEEL CADMIUM PLATED	
	DASH NO.	DASH NO.	DASH NO.	
2.933	MS16625-300	MS16625-2300	MS16625-1300	
3.000	-300	-2300	-1300	
3.062	-306	-2306	-1306	
3.125	-312	-2312	-1312	
3.149	-316	-2316	-1316	
3.156	-315	-2315	-1315	
3.250	-325	-2325	-1325	
3.346	-334	-2334	-1334	
3.469	-346	-2346	-1346	
3.500	-350	-2350	-1350	
3.543	-354	-2354	-1354	
3.562	-354	-2354	-1354	
3.625	-362	-2362	-1362	
3.740	-376	-2376	-1376	
3.750	-375	-2375	-1375	
3.875	-387	-2387	-1387	
3.938	-393	-2393	-1393	
4.000	-400	-2400	-1400	
4.125	-412	-2412	-1412	
4.250	-425	-2425	-1425	
4.330	-433	-2433	-1433	
4.500	-450	-2450	-1450	
4.625	-462	-2462	-1462	
4.724	-475	-2475	-1475	
4.750	-475	-2475	-1475	
5.000	-500	-2500	-1500	
5.250	-525	-2525	-1525	
5.375	-537	-2537	-1537	
5.500	-550	-2550	-1550	
5.570	-575	-2575	-1575	
6.000	-600	-2600	-1600	
6.250	-625	-2625	-1625	
6.500	-650	-2650	-1650	
6.625	-662	-2662	-1662	
6.750	-675	-2675	-1675	
7.000	-700	-2700	-1700	
7.250	-725	-2725	-1725	
7.500	-750	-2750	-1750	
8.000	-800	-2800	-1800	
8.250	-825	-2825	-1825	
8.500	-850	-2850	-1850	
8.750	-875	-2875	-1875	
9.000	-900	-2900	-1900	
9.250	-925	-2925	-1925	
9.500	-950	-2950	-1950	
9.750	-975	-2975	-1975	
10.000	MS16625-1000	MS16625-3000	MS16625-2000	

△ SUBSTITUTE CORROSION RESISTING STEEL WHEN USED IN TEMPERATURES OVER 450° F AND FOR FOOD MACHINERY.

PA NAVY - OS Other Code ARMY - WC AIR FORCE - 11	TITLE RING, RETAINING, INTERNAL, BASIC (TAPERED SECTION TYPE)	MILITARY STANDARD MS16625
PROCUREMENT SPECIFICATION MIL-R-21248 TY. 1 CL. 1	SUPERSEDES	SHEET 7

APPROVED 11 DEC 1956 REVISED (C) FOR CHANGES SEE SHEETS 1 THROUGH 10

REVIEWER SYMBOLS:  
NAVY - OS  
ARMY - WC, MI, AV  
AIR FORCE - 82, 85

"Review user information is current as of the date of this document. For any condition of change to this document, depth of revision should be based on the information in the current 000115."

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# RECOMMENDED DESIGN LIMITATIONS AND USAGE:

FED. SUP CLASS  
5340

(a) INTENDED USE - TO PROVIDE SHOULDERS FOR POSITIONING AND RETAINING MACHINE COMPONENTS IN HOUSINGS (BORES). TAPERED DESIGN PRINCIPLE PERMITS RINGS TO MAINTAIN CONSTANT CIRCULARITY AND PRESSURE AGAINST BOTTOM OF GROOVE. THE USE OF THE FOLLOWING FORMULAS IS BASED ON THE FACT THAT THE RING WILL NOT FAIL IN COMPRESSION.

(b) ALLOWABLE THRUST LOAD CAPACITY OF THE RINGS. ABUTTING COMPONENTS TO HAVE SHARP CORNERS.

$$P = \frac{WHX}{F} \quad \text{WHERE:}$$

P = ALLOWABLE THRUST LOAD (POUNDS).  
H = HOUSING DIAMETER (INCHES).  
T = RING THICKNESS (INCHES).  
X = ULTIMATE SHEAR STRENGTH OF THE RING MATERIAL (P.S.I.).  
F = FACTOR OF SAFETY, F = 4, IS RECOMMENDED, SINCE THE RING UNDER LOAD IS SUBJECTED NOT ONLY TO PURE SHEAR STRESSES BUT ALSO TO BENDING STRESSES.

(c) ALLOWABLE LOAD CAPACITY OF GROOVE WALL -

$$P = \frac{WHY}{F} \quad \text{WHERE:}$$

P = ALLOWABLE COMPRESSION LOAD (POUNDS).  
H = HOUSING DIAMETER (INCHES).  
d = GROOVE DEPTH (INCHES).  
Y = YIELD STRENGTH IN COMPRESSION OF THE GROOVE MATERIAL (P.S.I.).  
F = FACTOR OF SAFETY - TO INSURE A SAFE WORKING LOAD A SAFETY FACTOR, F = 2, IS RECOMMENDED.

(d) MINIMUM DISTANCE BETWEEN OUTER GROOVE WALL AND END OF HOUSING -

$$Z = 3d \quad \text{WHERE:}$$

Z = MINIMUM DISTANCE BETWEEN OUTER GROOVE WALL AND END OF HOUSING (INCHES).  
d = GROOVE DEPTH (INCHES).

(e) ALLOWABLE HOUSING DIAMETER -

$$H = \sqrt{\frac{G^2 - 4TP}{YF}} \quad \text{WHERE:}$$

H = ALLOWABLE HOUSING DIAMETER.  
G = GROOVE DIAMETER.  
F = FACTOR OF SAFETY (SEE FORMULA (c) ABOVE).  
P = DESIGN LOAD.  
Y = YIELD STRENGTH IN COMPRESSION OF GROOVE MATERIAL (P.S.I.).

(f) DIFFERENTIAL ROTATION:

THE CONDITIONS UNDER WHICH A RETAINING RING MAY BE USED WHEN ADJACENT PARTS ROTATE RELATIVE TO IT, FALL INTO TWO CATEGORIES:

- (1) WHERE NO THRUST IS EXERTED BY ADJACENT PART: IN THIS CASE, DIFFERENTIAL ROTATION OF RING AND ADJACENT PART CREATES NO ELEMENT OF RISK IN THE APPLICATION OF THE RINGS BECAUSE NO FRICTIONAL TORQUE IS EXERTED BY THE MACHINE PART ON THE RING.
- (2) CONSIDERATION MUST BE GIVEN TO THE MAGNITUDE OF THE THRUST INVOLVED. THE FRICTION MOMENT MAY NOT EXCEED THE BENDING MOMENT, WHICH THE RING CAN TOLERATE WITHOUT RELEASING ITS PRESSURE AGAINST THE BOTTOM OF THE GROOVE, FORMULATED AS FOLLOWS:

$$fPN \leq \frac{ATE^2}{18} \quad \text{OR} \quad P \leq \frac{ATE^2}{18fN}$$

WHERE:

P = ALLOWABLE THRUST LOAD EXERTED BY ADJACENT PART (POUNDS).  
f = COEFFICIENT OF FRICTION.  
s = WORKING STRESS OF RING UNDER MAXIMUM CONTRACTION (P.S.I.).  
T = RING THICKNESS (INCHES).  
E = GREATEST WIDTH SECTION OF RING (INCHES).  
N = NEUTRAL RING DIAMETER (INCHES) - FREE DIAMETER MINUS 3/4 E DIMENSION.

IN SUCH CASES WHERE DIFFERENTIAL ROTATION OCCURS THE CALCULATION SHOULD BE BASED ON THE MAXIMUM POSSIBLE VALUE OF THE COEFFICIENT OF FRICTION.

(g) IMPACT CAPACITY OF RING OR GROOVE WALL:

$$I_R = \frac{PT}{2} \quad \text{FOR THE RING (INCH POUNDS) ABUTTING COMPONENTS TO HAVE SHARP CORNERS.}$$

$$I_G = \frac{Pd}{2} \quad \text{FOR THE GROOVE (INCH POUNDS).}$$

WHERE:

P = ALLOWABLE THRUST LOAD OF RING OR GROOVE (POUNDS).  
T = RING THICKNESS (INCHES).  
I\_G = IMPACT CAPACITY OF GROOVE WALL (INCH POUNDS).  
d = GROOVE DEPTH (INCHES).  
I\_R = IMPACT CAPACITY OF RING (INCH POUNDS).

- \* FOR RINGS OF STEEL X = 120,000 P.S.I. ULTIMATE SHEAR STRENGTH FOR RING SIZES UP TO 3/4 INCH  
X = 150,000 P.S.I. ULTIMATE SHEAR STRENGTH FOR RING SIZES 3/4 INCH AND OVER.  
s = 250,000 P.S.I. WORKING STRESS.

- \* FOR RINGS OF BERYLLIUM COPPER X = 110,000 P.S.I. ULTIMATE SHEAR STRENGTH FOR ALL SIZES.  
s = 180,000 P.S.I. WORKING STRESS.

APPROVED 11 DEC 1958 REVISED (C) FOR CHANGES SEE SHEETS 1 THROUGH 10

P.A. NAVY - OS Other Code ARMY - WC AIR FORCE - 11	TITLE RING, RETAINING, INTERNAL, BASIC (TAPERED SECTION TYPE)	MILITARY STANDARD MS16625
PROCUREMENT SPECIFICATION MIL-R-21246 TY. I CL. 1	SUPERSEDES	SHEET 8



USPS SYMBOLS

NAVY - MC  
ARMY - AT, MU, ME

REVIEWER SYMBOLS

NAVY - OS  
ARMY - WC, ME, AV  
AIR FORCE - 92, 95

"Earlier/now information is current as of the date of this document. For future confirmation of changes to this document, draft circulation should be based on the information in the current DODSIS."

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FED. SUP CLASS  
5340

- (h) LOAD CAPACITY, WITH THE RETAINED PART RADIUSED OR CHAMFERED:  
WHEN THE RADIUS OR CHAMFER OF THE RETAINED PART DOES NOT EXCEED THE MAXIMUM RADIUS ALLOWED FOR THE BOTTOM OF THE RING GROOVE THE LESSER LOAD CAPACITY COMPUTED FROM THE FORMULAS ON SHEET 8 WILL APPLY. THE CORNER RADI AND CHAMFERS LISTED ON SHEETS 1 THRU 3 WERE CHOSEN AS LARGE AS POSSIBLE FOR THE RING SIZES INVOLVED AND ARE RELATED TO THE MAXIMUM THRUST LOADS LISTED IN THE TABLE BELOW.  
IF THE CORNER RADI OR CHAMFERS ARE SMALLER THAN THOSE LISTED, THEN THE THRUST LOADS INCREASE PROPORTIONALLY, IN ACCORDANCE WITH THE FOLLOWING FORMULAS:

$$P^1 = \frac{PCH}{CH^1}$$

OR

$$P^1 = \frac{PR}{R^1}$$

WHERE:

$P^1$  = NEW ALLOWABLE THRUST LOAD.  
 $P$  = LISTED ALLOWABLE THRUST LOAD.  
 $CH^1$  = NEW (SMALLER) CHAMFER.  
 $CH$  = LISTED CHAMFER  
 $R^1$  = NEW (SMALLER) CORNER RADIUS.  
 $R$  = LISTED CORNER RADIUS

LIMIT LOADS LISTED BELOW ARE BASED ON RINGS OF STEEL OR STAINLESS STEEL (WORKING STRESS = 250,000 P.S.I. - TABLE I) AND OF BERYLLIUM COPPER (WORKING STRESS = 180,000 P.S.I. - TABLE II). IF THE ALLOWABLE GROOVE CAPACITY LOADS, AS CALCULATED BY USING THE FORMULA ON SHEET 8 ARE LESS THAN THEY SHOULD BE USED.

NOMINAL RING SIZE		ALLOWABLE THRUST LOAD FOR RING ASSEMBLIES WITH PARTS HAVING MAXIMUM CORNER RADI OR CHAMFERS.	
FROM	TO	TABLE I STEEL OR STAINLESS STEEL	TABLE II BERYLLIUM COPPER
.250	.312	190 LB	140 LB
.375	.453	530 LB	380 LB
.500	.750	1100 LB	800 LB
.777	.938	1850 LB	1200 LB
1.000	1.500	2400 LB	1700 LB
1.562	2.000	3900 LB	2800 LB
2.062	2.531	6200 LB	
2.862	3.000	9000 LB	
3.062	5.000	12000 LB	
5.250	6.000	15000 LB	
6.250	7.000	23000 LB	
7.250	10.000	34000 LB	

NOTE: THE ABOVE FORMULAS ARE NOT TO BE USED FOR BRITTLE MATERIALS SUCH AS CAST IRON, ETC.

WARNING: RINGS SHOULD NOT BE EXCESSIVELY CONTRACTED DURING INSTALLATION SINCE THIS WILL LEAD TO RING FAILURE. IF RING HAS PLAY BETWEEN THE GROOVE DIAMETER AND THE OUTSIDE RING DIAMETER THIS INDICATES THAT THE RING HAS BEEN EXCESSIVELY CONTRACTED, (PROVIDING GROOVE DIAMETER HAS BEEN MACHINED TO RECOMMEND DIMENSIONS).

APPROVED 11 DEC 1956 REVISED (C) FOR CHANGES SEE SHEETS 1 THROUGH 10

P.A. NAVY - OS	FILE	MILITARY STANDARD
Other Cust ARMY - WC AIR FORCE - 11	RING, RETAINING, INTERNAL WASH (TAPERED SECTION TYPE)	MS16625
PROCUREMENT SPECIFICATION MIL-R-21248 TY ICL 1	SUPERSEDES	SHEET 3

DD FORM 672-1

PREPARED BY THE ARMY ENGINEERING CENTER

PLATE NO. 100

USER SYMBOLS:  
NAVY - MC  
ARMY - AT, MU, ME

REVIEWER SYMBOLS:  
NAVY - OB  
ARMY - WC, ML, AV  
AIR FORCE - B2, B5

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FED. SUP CLASS  
5340

# NOTES:

## 1 - MATERIAL:

- (a) STEEL, CARBON, FEDERAL STANDARD 66, STEEL NOS. 1066 THRU 1090, STEEL, CORROSION RESISTING, (SEE PROCUREMENT SPECIFICATION).  
(b) BERYLLIUM COPPER, FEDERAL SPECIFICATION QQ-C-533.

## 2 - HARDNESS:

HOUSING DIA.	STEEL	HOUSING DIA.	CORROSION RESISTING STEEL	BERYLLIUM COPPER
.250 AND .312	ROCKWELL 15N-86-88	.250 AND .312	ROCKWELL 15N-82.5-86	ROCKWELL 15N-77-82
.375 TO .512 INCL.	ROCKWELL 30N-69.5-73	.375 TO 1.023	ROCKWELL 30N-63-69.5	ROCKWELL 30N-54-62
.562 TO .777 INCL.	ROCKWELL 30N-67.5-72	1.062 AND OVER	ROCKWELL C-44-51	ROCKWELL C-34-43
.812 TO 1.023 INCL.	ROCKWELL 30N-66-71			
1.062 TO 3.000 INCL.	ROCKWELL C-47-52			
3.062 AND OVER	ROCKWELL C-45-52			

## 3 - PROTECTIVE COATINGS AND TREATMENTS:

- (a) CADMIUM PLATING, QQ-P-416, TYPE II, CLASS 3.  
(b) CORROSION RESISTING STEEL RINGS SHALL BE PASSIVATED, QQ-P-35.  
(c) PHOSPHATE COATING, MIL-G-16232, TYPE II.

## 4 - PART NUMBER - (MS NUMBER) - (RING DASH NUMBER).

EXAMPLE - MS16625-1100 IS THE PART NUMBER FOR A STEEL, INTERNAL RETAINING RING FOR USE IN A 1.000 DIAMETER HOUSING.

## 5 - DIMENSIONS IN INCHES, UNLESS OTHERWISE SPECIFIED. DIMENSIONING AND TOLERANCING SHALL BE IN ACCORDANCE WITH UNAS Y14.5.

## 6 - INACTIVATE FOR NEW DESIGN, UNCOATED STEEL AND ZINC PLATED STEEL, (SEE SUBSTITUTION SHEET 6 AND 7).

## 7 - THE GOVERNMENT HAS A ROYALTY FREE LICENSE UNDER WALDES KOHNOOR INC. COPYRIGHTS PERTINENT TO PORTIONS OF THE INFORMATION CONTAINED HEREIN AND UNDER THE FOLLOWING LISTED PATENT FOR THE BENEFIT OF MANUFACTURERS OF THE ITEM FOR THE GOVERNMENT OR FOR USE IN EQUIPMENT TO BE DELIVERED TO THE GOVERNMENT. (U. S. PATENT NO. 2,861,824).

FOR DESIGN FEATURE PURPOSES, THIS STANDARD TAKES PRECEDENCE OVER PROCUREMENT DOCUMENTS REFERENCED HEREIN. REFERENCED DOCUMENTS SHALL BE OF THE ISSUE IN EFFECT ON DATE OF INVITATIONS FOR BID.

APPROVED 11 DEC 1958 REVISED (C) FOR CHANGES SEE SHEETS 1 THROUGH 10

P.A. NAVY - OB Other Case	TITLE RING, RETAINING, INTERNAL, BASIC (TAPERED SECTION TYPE)	MILITARY STANDARD MS16625
PROCUREMENT SPECIFICATION MIL-R-21248 TY. I CL. I	SUPERSEDES	SHEET 10

DD FORM 1 SEP 57 672-1

PREVIOUS EDITIONS OF THIS FORM ARE OBSOLETE